

REMARKS

The Applicants would like to thank the Examiner for the quick and courteous Office Action. The claims remaining in the application are 1-8, 10-12 and 14. Claims 1, 7, 8 and 14 are amended herein. Claim 9 is canceled. No new matter is introduced.

35 U.S.C. §103(a) Rejection Based on Dymond, et al.

The Examiner has rejected claims 1-12 and 14 under 35 U.S.C. §103(a) as allegedly being obvious from U.S. Pat. No. 4,670,501 to Dymond, et al.

The Examiner finds that Dymond, et al. teaches an oil based drilling fluid which comprises a latex of acrylate polymers dispersed in the oil based fluid (Abstract). The Examiner admits that Dymond, et al. differs from the present invention in that the use of methyl methacrylate polymer is not exemplified, the size of the latex particles is not disclosed and the use in a sand formation is not disclosed. With respect to claim 1, the Examiner finds that Dymond, et al. teaches that up to 100% of a C1 methacrylate monomer may be used to form the polymer of the latex. The Examiner contends that it would be obvious to one of ordinary skill in the art to utilize methyl methacrylate as the monomer for the latex polymer. The Examiner alleges that such would obviously have similar deformable characteristics as in the present invention. With respect to claim 4, the Examiner contends that it would be obvious to one of ordinary skill in the art to vary the size of the latex particles of Dymond, et al. in order to optimize the thickening effect, under various conditions encountered when drilling. With respect to claims 8 and 14, the Examiner alleges that it is well known that drilling for oil will take place both onshore and offshore, and in such offshore drilling sand formations will be encountered and such encountering of sand would be obvious to one of ordinary skill in the art.

The Applicants must respectfully traverse. To support an obviousness rejection, the Examiner has the initial burden of establishing a *prima facie* case of obviousness of the pending claims over the cited prior art, *In re Oeticker*, 977 F.2d 1443, 1445; 24 U.S.P.Q.2d 1443 (Fed. Cir. 1992). Applicants respectfully submit that the Examiner has not established such a *prima facie* case for the claims as amended herein.

New reference Dymond, et al. discloses water-immiscible liquids, e.g. oil-based drilling fluids, thickened by the addition of an aqueous dispersion of polymeric particles that are water-insoluble, and insoluble but swellable polymer, in the water immiscible liquid (Abstract). Dymond, et al. is focused on obtaining viscosity in fluids that is reduces with applied shear, *i.e.* shear-thinning behavior. Please see column 1, lines 5-11 and column 2, lines 32-41 therein. Drilling fluids that relate to fluid loss or sealing sand formations are not a goal or concern of Dymond, et al. Indeed, the polymers of Dymond, et al. are not taught for fluid loss control because a separate fluid loss agent must be added to their compositions; please see Example 3 therein, column 7, line 64 to column 8, line 14, especially line 3. As the Examiner pointed out, Dymond, et al. teaches that a C1 methacrylate monomer may be used to form the polymer of the latex therein.

The Examiner's attention is respectfully directed to the claims as amended. With respect to the independent composition claims 1 and 7, the Applicants respectfully note that "polymethyl methacrylate" has been removed from the group of recited polymer particles. The Applicants respectfully submit that Dymond, et al. does not disclose or suggest or hint at any of the other polymer particles recited by the composition claims. For this reason, the Applicants respectfully submit that the claims as amended are not obvious from the limited teachings of Dymond, et al. and that no *prima facie* position of obviousness over Dymond, et al. has been made for these claims. One having ordinary skill in the art reviewing Dymond, et al. would not be motivated or impelled to change the polymer in the particles to those recited in the claims as amended; no reason is presented for doing so.

With respect to the independent method claims 8 and 14, the Examiner's attention is respectfully directed to the amendments thereto, which include further defining the polymer particles as being in a size distribution where the majority of the particles range from about 1 to less than 100 microns. This language is from dependent claim 9 as originally filed and elsewhere in the specification and thus its inclusion in these claims does not constitute an improper insertion of new matter. (Claim 9 has been canceled.)

Furthermore, independent method claims 8 and 14 have been amended at the respective ends thereof to recite that the oil-based drilling fluid is circulating in contact with a borehole wall *in a sand formation*. Support for this language is found in the pre-

amble of each claim and thus its repetition at the end of the respective claims does not constitute an improper insertion of new matter.

Both of these changes to the independent method claims are to emphasize that the methods involve sealing subterranean *sand* formations, and that it is important to used sized polymer particles, as described and claimed, to seal against the sand particles. Applicants respectfully submit that Dymond, et al. does not teach or suggest these claimed methods because the reference is only concerned with providing thickened oil-based drilling fluids. Structural evidence of the different functions and goals of the Dymond, et al. fluids as compared to those claimed herein is seen by the different and smaller sizes disclosed by Dymond, et al. – please see column 2, line 63 to column 3, line 12.

The Examiner admits that the Dymond, et al. disclosure differs from that of the claimed invention in a number of respects, including the size of the latex particles and the use in a sand formation. The Examiner contends that it would “be obvious to one of ordinary skill in the art to vary the size of the latex particles of Dymond, in order to optimize the thickening effect, under various conditions encountered when drilling”, however this is not the claimed inventive method. The technical problem addressed by the Applicants is not to optimize thickening (although this may be a consequence of the claimed method). As claimed, the technical problem is to inhibit fluid loss in a sand formation using an oil-based drilling fluid. The problem is solved by the recited method which is not obvious from Dymond, et al. which is completely silent with respect to sand formations or sealing against the sand formation. Silence in the references is not a proper substitute for a disclosure of facts adequate enough to support a conclusion of obviousness, *In re Burt*, 148 U.S.P.Q. 548, 553 (C.C.P.A. 1966). A *prima facie* case must be put forward by the Examiner; missing facts cannot be assumed, *Ex parte Wolters*, 214 U.S.P.Q. 735 (Bd. App. 1979). As noted previously, it is true that Dymond, et al. mentions fluid loss, but only with respect to adding *some other fluid loss agent* to the Example 3 drilling fluid. There is *no* teaching or suggestion or disclosure in Dymond, et al. that the polymer particles therein may be used in a method to inhibit fluid loss in sand formations. In fact, Applicants respectfully submit that the fact that the reference

requires a separate additive to control fluid loss *teaches away from* using the Dymond, et al. fluids for the fluid loss methods recited herein.

"A prima facie case of obviousness can be rebutted if the applicant ... can show 'that the art in any material respect taught away' from the claimed invention." *In re Geisler*, 116 F.3d 1465, 1469, 43 U.S.P.Q.2d (BNA) 1362, 1365 (Fed. Cir. 1997) (quoting *In re Malagari*, 499 F.2d 1297, 1303, 182 U.S.P.Q. (BNA) 549, 533 (CCPA 1974)). "A reference may be said to teach away when a person of ordinary skill, upon reading the reference, ... would be led in a direction divergent from the path that was taken by the applicant." *Tec Air, Inc. v. Denso Mfg. Mich. Inc.*, 192 F.3d 1353, 1360, 52 U.S.P.Q.2d (BNA) 1294, 1298 (Fed. Cir. 1999).

Thus, the Applicants respectfully submit that a *prima facie* obviousness rejection has not been made over Dymond, et al. with respect to the method claims either.

Reconsideration is respectfully requested.

35 U.S.C. §103(a) Rejection Based on GB 2131067 or Patel, et al.

The Examiner has rejected claims 8-12 and 14 under 35 U.S.C. §103(a) as allegedly being obvious from GB 2131067 or U.S. Pat. No. 4,740,319 to Patel, et al.

The Examiner finds that GB '067 teaches an oil-based drilling fluid which comprises a hydrocarbon, a latex and an emulsifier allegedly within the scope of the present invention, referring to the examples and page 1, line 57 to page 2, line 4. The Examiner contends that Patel, et al. teaches an oil-based drilling fluid which comprises a hydrocarbon, a latex and an emulsifier within the scope of the present invention, referring to column 6, lines 1-53. The Examiner finds that the examples teach up to 5 ppb of latex material, which would be within the scope of greater than about 0.1% of claims 5 and 7. The Examiner admits that GB '067 and Patel, et al. differ from the present invention in that the use in a sand formation and the specific size of the latex particles is not disclosed. The Examiner alleges that it is well known that drilling for oil will take place both onshore and offshore, and in such offshore drilling sand formations will be encountered and such encountering of sand would be obvious to one of ordinary skill in the art. The Examiner asserts that the latex in both references is used in fluid loss control. The Examiner thus contends that it would be obvious to one of ordinary skill in the art to vary

the size of the latex particles of Patel, et al. or GB '067 to optimize the fluid loss control of such particles, in various formations when drilling.

The Applicants again hereby respectfully traverse. To support an obviousness rejection, the Examiner has the initial burden of establishing a *prima facie* case of obviousness of the pending claims over the cited prior art, *In re Oeticker, id.* Applicants respectfully submit that the Examiner has not established such a *prima facie* case for the method claims amended herein.

The Examiner previously allowed these claims over the teachings of GB '067 and Patel, et al.

The Examiner's attention is again respectfully directed to the fact that independent method claims 8 and 14 have been amended to recite that the polymer particles *are in a size distribution where the majority of the particles range from about 1 to less than 100 microns*, and that circulating the oil-based drilling fluid in contact with a borehole wall is *in a sand formation*. As established previously, it is important that the sized polymer particles, as described and claimed, seal against the sand particles. Neither GB '067 nor Patel, et al. teach or suggest or hint at using a particular size range of polymer particles when drilling and circulating an oil based drilling fluid containing the same in contact with a borehole wall in a sand formation.

The Examiner admits that both GB '067 and Patel, et al. differ from that of the claimed invention in a number of respects, including the size of the latex particles and the use in a sand formation. The Examiner contends that it would "be obvious to one of ordinary skill in the art to vary the size of the latex particles of Patel or GB '067 in order to optimize the fluid loss control of such particles, in various formations encountered when drilling, however this is not the claimed inventive method, as amended. The technical problem addressed by the Applicants is to provide a fluid loss control and sealing agent for drilling in *sand formations*. As claimed, the technical problem is to inhibit fluid loss in a sand formation using an oil-based drilling fluid. The problem is solved by the recited method using polymer particles of the recited size distribution which is not taught by, disclosed by, hinted by nor obvious from Patel, et al. and/or GB '067 which are completely silent with respect to *sand formations* or providing fluid loss control in *sand for-*

mations, which can be particularly problematic. Again, silence in the references is not a proper substitute for a disclosure of facts adequate enough to support a conclusion of obviousness, *In re Burt, id.* A *prima facie* case must be put forward by the Examiner; missing facts cannot be assumed, *Ex parte Wolters, id.* The Applicants respectfully submit, and the Examiner explicitly admits, that the references teach nothing about fluid loss control in sand formations. There is no teaching or suggestion in either reference that would motivate one having ordinary skill in the art to modify the teachings of these references to improve fluid loss in sand formations and particularly how to so modify the teachings of the references. Thus a *prima facie* case of obviousness has not been made.

The Applicants further respectfully submit that it is not obvious or apparent how to adapt drilling technology for one situation for another particular situation, particularly when different geologies are involved. The hydrocarbon exploration and recovery industry has had to make many discoveries and technological innovations as obtaining oil and gas from increasingly difficult and challenging geologies are encountered. It cannot necessarily be assumed that one method known to work in one geology can be used, without non-obvious adaptations or changes, to another geology, particularly when, as here, there is nothing in the references to suggest how to adapt or make changes to the methods for the different geological structures. The Examiner's attention is respectfully directed to paragraph [0008], page 3, lines 3-10 of the application as filed:

[0008] There is an analogous need to seal and prevent fluid loss control when recovering hydrocarbons from *sand formations, particularly depleted sand formations*. Depleted sand formations are productive, or formerly productive, hydrocarbon zones that have been produced, drawn down, or otherwise depleted of their content, *creating a lower formation pressure than that of the fluid which may be in use in the well. Because of this pressure differential, it is important to partially or completely seal the sand formation to inhibit or prevent fluid loss of the mud into the sand.* (Emphasis added.)

Please also see paragraph [0068] on page 24, lines 2-8:

[0071] In another non-limiting embodiment of the invention, it has been discovered that polymer lattices within the scope of this invention, such as MAX-SEAL, may be used as a sealing agent in oil base fluids

when drilling depleted sand formation where mud loss might occur. This embodiment of the invention may also be used in at least partially sealing subterranean sand formations during other hydrocarbon recovery operations.

It should of course be understood that MAX-SEAL is an embodiment of the claimed invention, as amended herein. Please also see paragraph [0071] on page 24, lines 20-28:

[0071] The sealing ability of MAX-SEAL increases with decrease in permeability. MAX-SEAL might be used with the best efficiency *when drilling some low permeable depleted sand formation. Because of this deformable property, MAX-SEAL can seal very small pores and reduce the fluid losses of oil base mud in low permeable depleted sand formations where other lost circulation material (LCM) might not work effectively.* As shown by FIG. 12, without MAX-SEAL, the fluid loss rate through a 0.4 Darcies disk reached a constant after two hours. In contrast, the fluid loss rate of the mud with 3% MAX-SEAL continually decreased with time and finally reached to zero. (Emphasis added.)

The Applicants respectfully submit that no evidence has been provided of the motivating force which would *impel* one having *ordinary* skill in the art to modify the methods of either reference to be that recited in the claimed invention, as amended, to solve the problem of reducing fluid loss in sand formations.

"Our reviewing courts have *often* advised the Patent and Trademark Office that it can satisfy the burden of establishing a *prima facie* case of obviousness *only* by showing some objective teaching in either the prior art, or knowledge generally available to one of ordinary skill in the art, that 'would lead' that individual 'to combine the relevant teachings in the references.' Accordingly, an examiner *cannot* establish obviousness by locating references which describe aspects of a patent applicant's invention without *also* providing evidence of the motivating force which would *impel* one skilled in the art to do what the patent applicant has done." [Citations omitted; emphasis added.] *Ex parte Levengood*, 28 U.S.P.Q.2d 1300, 1302 (B.P.A.I. 1993).

The Applicants respectfully submit that the single GB '067 reference nor the single Patel, et al. reference, nor both references taken together teach or suggest how to drill in and reduce fluid loss in sand formations. A *prima facie* case of obviousness has not been established.

Reconsideration is respectfully requested.


Double-Patenting Rejection

The Examiner has provisionally rejected claims 1-12 and 14 on the ground of non-statutory double patenting as being unpatentable over claims 1-14 of co-pending Application No. 11/437351. The Examiner helpfully indicated that a timely filed terminal disclaimer may be used to overcome this rejection.

The Examiner's attention is respectfully directed to the enclosed terminal disclaimer in compliance with 37 CFR §1.321. Thus, Applicants respectfully submit that the subject double-patenting rejection is obviated and overcome. Reconsideration is respectfully requested.

It is respectfully submitted that the amendments and discussion presented above overcome the rejections and place the claims in condition for allowance. Reconsideration of the rejections, and reconsideration and allowance of the claims are respectfully requested. The Examiner is respectfully reminded of his duty to indicate allowable subject matter. The Examiner is also invited to call the Applicants' attorney at the number below for any reason, especially any reason that may help advance the prosecution.

Respectfully submitted,
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